AMENDMENTS TO THE CLAIMS:

1-12. (Canceled)

13.(Original)   A symbol detection method for a receiver of a MIMO communication system comprising:

receiving a multipath signal from M transmit antennas, M being an integer greater than one;

obtaining a data sample as a function of the received multipath signal; and

fitting the data sample to at least one point of an n-dimensional real signal constellation, wherein $n=2M$.

14.(Original)   The method of claim 13 wherein the signal constellation consists of a plurality of points disposed among K subsets, wherein each point of a subset is disposed among one and only one of at least two n-1 real dimensional sub-constellations, and wherein a minimum distance between a point of one subset and a point of an adjacent subset is defined by a maximized minimum Kullback-Leibler distance, wherein K is an integer at least equal to one.

15.(Original)   The method of claim 14 wherein each subset defines a closed arcuate surface.

16.(Original)   The method of claim 15 wherein each closed arcuate surface is a sphere and further wherein each sub-constellation defines a circle.

17.(Original)   The method of claim 14 wherein the at least two sub-constellations of at least one of the K subsets comprise at least one pair of sub-constellations defining x points, each said sub-constellation defining x points being disposed such that an origin of the constellation lies along an axis of symmetry defined by said pair.

18.(Original)   The method of claim 17 wherein at least one of the K subsets further comprises an additional sub-constellation defining y points disposed symmetrically about the origin of the constellation, and wherein no other sub-constellation has at least y points.

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19.(Original) The method of claim 17 wherein each of the subsets comprise a said pair of sub-constellations defining x points.

20.(Original) The method of claim 14 wherein fitting the data sample to points comprises recursively comparing the data sample to points of a sub-constellation of a subset until the data sample is matched to a constellation point.

21.(Original) The method of claim 14 wherein fitting the data sample comprises selecting an n dimensional real signal constellation from among at least two stored signal constellations based on the determined number M of transmit antennas, wherein one of the at least two stored signal constellations defines $n=2M$ real dimensions and another of the at least two stored signal constellations defines one of 2(M+1) and 2(M-1) real dimensions.

22.(Original) The method of claim 14 wherein fitting the data sample comprises determining one of a signal to noise ratio, a bit energy to noise.power spectral density ratio, and a symbol energy to noise power spectral density ratio, and selecting an n dimensional real signal constellation based on the determined ratio.

23-33. (Canceled)

34.(Previously Presented)   The symbol detection method of claim 13, wherein said point is one of a plurality of constellation points, each of said plurality lying within one and only one of at least two n-1 real dimensional sub-constellations.

35.(Previously Presented)   The symbol detection method of claim 34, wherein either all points of the signal constellation or all points of the signal constellation except one are within the plurality of points.

36-40. (Canceled)

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